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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/561,038

12/16/2005

Katsuhito Miura

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3768

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EXAMINER

LEWIS, BEN

ART UNIT

PAPER NUMBER

1795

NOTIFICATION DATE

DELIVERY MODE

07/09/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b> 10/561,038	<b>Applicant(s)</b> MIURA ET AL.	
	<b>Examiner</b> Ben Lewis	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 28<sup>th</sup>, 2010 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohjiya et al.. (U.S. Patent No. 5,837,157) in view of Miura et al. (U.S. Patent No. 6,159,389) and further in view of Takatera et al. (U.S. Patent No. 6,159,638).

With respect to claim 1, 3, 4, Kohjiya et al. disclose a polymer solid electrolyte (title) wherein the present invention provides a polymer solid electrolyte comprising a polyether copolymer having an oligooxyethylene side chain and an electrolyte salt

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compound which is soluble in the polyether copolymer, the polyether polymer being a solid random copolymer having a main chain structure consisting of 5 to 30 molar % of a structural unit of the following formula (1) and 95 to 70 molar % of a structural unit of the following formula (2), and the polyether polymer having a polymerization degree  $n$  of an oxyethylene unit of the side chain part of the formula (1) of 1 to 12, a number-average molecular weight of 100,000 to 2,000,000, a glass transition point measured by a differential scanning calorimeter (DSC) of not more than  $-60^{\circ}\text{C}$ . and a heat of fusion of not more than 70 J/g (Col 1 lines 10-35). (Examiner notes that Kohjiya polymer composition comprises only two polymers of formula (1) and (2) which read on Applicants formula (i) and (ii).

Kohiya et al. teach tetrahydrofuran as a solvent (Col 4 lines 1-15).

Kohiya et al. does not specifically teach an additive as an optical ingredient. However, Miura disclose a polyether copolymer wherein triethylene glycol dimethacrylate (additive) was added as a crosslinking agent (Col 14 lines 1-16). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the additive of Miura et al. into the polymer solid electrolyte of Kohjiya et al. to improve polymer mechanical strength.

Miura et al. as modified by Kohiya et al. do not specifically teach wherein the amount of the electrolyte solution is within the range of 100 to 10,000 parts by weight based on 100 parts by weight of the polyether binary copolymer. However, Taketera et al. disclose a solid polymer electrolyte and preparation method (title) wherein, the weight ratio of the polymer blend to the nonaqueous solvent is preferably 30 to 100

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parts by weight relative to 100 parts by weight of the nonaqueous solvent. If the proportion of the polymer blend is smaller than 30 parts by weight, the exudation of the nonaqueous solvent may result, making it difficult to shape the resulting solid polymer electrolyte as desired. Even if the shaping of the solid polymer electrolyte is possible, the electrolyte may have an insufficient mechanical strength. If the proportion of the polymer blend is greater than 100 parts by weight, the effect of addition of the nonaqueous solvent cannot be expected for ensuring a high ionic conductivity (Col 6 lines 1-13). Therefore it would have been obvious to one of ordinary skill in the art to incorporate the weight ratio of electrolyte solvent to polymer of Taketera et al. into the electrolyte solution of Miura et al. as modified by Kohiya et al. because Taketera et al. teach that If the proportion of the polymer blend is smaller than 30 parts by weight, the exudation of the nonaqueous solvent may result, making it difficult to shape the resulting solid polymer electrolyte as desired. Even if the shaping of the solid polymer electrolyte is possible, the electrolyte may have an insufficient mechanical strength. If the proportion of the polymer blend is greater than 100 parts by weight, the effect of addition of the nonaqueous solvent cannot be expected for ensuring a high ionic conductivity (Col 6 lines 1-13).

Furthermore, it would have been within the skill of the ordinary artisan to incorporate adjust the electrolyte solution and copolymer composition of Miura et al. as modified by Kohiya et al. to be within the applicants claimed composition range in order to ensure high ionic conductivity *Discovery of optimum value of result effective variable*

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*in known process is ordinarily within skill of art.* In re Boesch, CCPA 1980, 617 F.2d 272, 205 USPQ215.

With respect to claim 2, Miura et al. teach that as the ethylenically unsaturated group-containing oxirane compound there can be glycidyl acrylate and glycidyl methacrylate (Col 4 lines 55-67).

With respect to claims 5-8, Kohjiya et al. teach a battery comprising a positive and negative electrode and polymer solid electrolyte of (Col 4 lines 19-36).

3. Claim 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohjiya et al.. (U.S. Patent No. 5,837,157) in view of Miura et al. (U.S. Patent No. 6,159,389) and further in view of Takatera et al. (U.S. Patent No. 6,159,638)..

With respect to claim 2, Kohjiya et al. disclose a polymer solid electrolyte above. Kohjiya et al. do not specifically teach wherein the repeating units of formula (ii) are derived from glycidyl acrylate and glycidyl methacrylate.

In the crosslinking due to radiation of activated energy ray such as ultraviolet ray, glycidyl acrylate, glycidyl methacrylate and glycidyl cinnamate are particularly preferable among the monomer component represented by the formula (III-c) (Col 8 lines 35-40).

Therefore it would have been obvious at the time the invention was made to use the glycidyl acrylate and glycidyl methacrylate of Miura et al. to make derive the compound of formula (1) of Kohjiya because a person of ordinary skill has good reason to pursue the known options within his or her technical grasp, in this case, to use the glycidyl acrylate and glycidyl methacrylate Miura et al., because these corsslinking agents are activated by using radiation. Ex Parte Smith, 83 USPQ.2d 1509, 1518-19 (BPAI, 2007) (citing KSR v. Teleflex, 127 S.Ct. 1727, 1740, 82 USPQ2d 1385, 1396 (2007)).

### ***Response to Arguments***

4. Applicant's arguments filed on June 28<sup>th</sup>, 2010 have been fully considered but they are not persuasive.

*Applicant's principal arguments are*

(a). Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ben Lewis/  
Examiner, Art Unit 1795

/PATRICK RYAN/  
Supervisory Patent Examiner, Art Unit 1795